

# Key TRANSLATING & SOLVING Inequalities

	Translate	Solve
1	"Seven more than three times a number is greater than thirty-four."	$\begin{array}{r} 3n+7 > 34 \\ -7 \quad -7 \\ \hline 3n > 27 \\ \frac{3n}{3} > \frac{27}{3} \\ n > 9 \end{array}$
	Inequality: $3n+7 > 34$	
2	"Fifteen less than twice a number is less than or equal to -23."	$\begin{array}{r} 2n-15 \leq -23 \\ +15 \quad +15 \\ \hline 2n \leq -8 \\ \frac{2n}{2} \leq \frac{-8}{2} \\ n \leq -4 \end{array}$
	Inequality: $2n-15 \leq -23$	
3	"The product of a number and -7, increased by 9, is at most 16."	$\begin{array}{r} -7n+9 \leq 16 \\ -9 \quad -9 \\ \hline -7n \leq 7 \\ \frac{-7n}{-7} \geq \frac{7}{-7} \\ n \geq -1 \end{array}$
	Inequality: $-7n+9 \leq 16$	
4	"The difference between eleven and one-fourth of a number is no less than -8."	$\begin{array}{r} 11 - \frac{1}{4}n \geq -8 \\ -11 \quad -11 \\ \hline -\frac{1}{4}n \geq -19 \cdot -4 \\ n \leq 76 \end{array}$
	Inequality: $11 - \frac{1}{4}n \geq -8$	
5	"10 subtracted from the quotient of a number and -3 is at least -1."	$\begin{array}{r} \frac{n}{-3} - 10 \geq -1 \\ +10 \quad +10 \\ \hline -3: \frac{n}{-3} \geq 9 \cdot -3 \\ n \leq -27 \end{array}$
	Inequality: $\frac{n}{-3} - 10 \geq -1$	
6	"The sum of seven-eighths of a number and 20 is 34 at minimum."	$\begin{array}{r} \frac{7}{8}n + 20 \geq 34 \\ -20 \quad -20 \\ \hline \frac{7}{8}n \geq 14 \cdot \frac{8}{7} \\ n \geq 16 \end{array}$
	Inequality: $\frac{7}{8}n + 20 \geq 34$	
7	"A number decreased by 19, divided by -6, is no more than 5."	$\begin{array}{r} -6 \cdot \frac{n-19}{-6} \leq 5 \cdot -6 \\ n-19 \geq -30 \\ +19 \quad +19 \\ \hline n \geq -11 \end{array}$
	Inequality: $\frac{n-19}{-6} \leq 5$	



# MORE INEQUALITY WORD PROBLEMS

**Directions:** Define a variable, set up an inequality, then solve.

- 8 The school will not announce a snow day unless there is at least 10 inches of snow on the ground. If it has already snowed 1.5 inches, how much more must it snow before school is canceled? Let  $c$  = amount of snow for cancelling

$$\begin{array}{r} c + 1.5 \geq 10 \\ -1.5 \quad -1.5 \\ \hline c \geq 8.5 \text{ inches} \end{array}$$

- 9 Mrs. Aries hired Jack, a math tutor, to help her son. Because of budget, she can pay him no more than \$420 a month. If Jack charges \$35 per hour, how many hours can he tutor each month?

$h$  = hours tutored

$$\begin{array}{r} 35h \leq 420 \\ \underline{35} \quad \underline{35} \end{array}$$

$$h \leq 12 \text{ hours}$$

- 10 The Parkview Middle School Football team will be playing in the state championship. The coach has free tickets that he will be distributing to his 52 football players to give to their friends and family. If he would like to give each player at least 3 tickets, how many total tickets must he have?

$t$  = # of tickets

$$\frac{t}{52} \geq 3$$

$$t \geq 156 \text{ tickets}$$

- 11 Kevin is taking a two-part test in social studies. Part 1 is multiple choice and worth 60 points. Part 2 is an essay portion and worth 40 points. He must earn at least 86 points to pass the class. If his teacher already graded Part 1 and he earned 54 points, how many points will he need to earn on Part 2?

$p$  = # of points on Part 2

$$\begin{array}{r} p + 54 \geq 86 \\ -54 \quad -54 \\ \hline \end{array}$$

$$p \geq 32 \text{ points}$$

- 12 Caitlyn works a part-time job at the bookstore which pays \$55 a week. She has already saved \$120 towards the purchase of a new \$450 iPad. How many weeks must she work in order to have more than the amount of money to buy the iPad?

$w$  = # of weeks

$$\begin{array}{r} 55w + 120 > 450 \\ -120 \quad -120 \\ \hline \end{array}$$

$$55w > 330$$

$$w > 6 \text{ weeks}$$

- 13 The parking meter charges \$2 for the first hour, then \$0.75 for each hour thereafter. Nate only has \$5. How many hours can he park?

$h$  = hours parked

$$\begin{array}{r} 0.75h + 2 \leq 5 \\ -2 \quad -2 \\ \hline \end{array}$$

$$\begin{array}{r} 0.75h \leq 3 \\ \underline{0.75} \quad \underline{0.75} \end{array}$$

$$h \leq 4 \text{ hours}$$